DisplayPort Extender Over CAT-7

EXT-DP-2CAT7

User Manual

Release A3

Gefen®

Important Safety Instructions

GENERAL SAFETY INFORMATION

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

Warranty Information

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Support section of the Gefen Web site at www.gefen.com.

PRODUCT REGISTRATION

Please register your product online by visiting the Register Product page under the Support section of the Gefen Web site.

Contacting Gefen Technical Support

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DisplayPort Extender over CAT-7 is a trademark of Gefen, LLC.

Important Notice

Gefen, LLC reserves the right to make changes in the hardware, packaging, and any accompanying documentation without prior written notice.

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Operating Notes

- CAT-7 cables should not exceed 100 feet (30 meters).
- Resolutions up to 1920 x 1200 (WUXGA) or 1080p Full HD are supported when using a single CAT-7 cable. Two CAT-7 cables must be used to support 2560 x 1600 (WQXGA).
- The DisplayPort Extender over CAT-7 only supports 8-bit color.

Features and Packing List

Features

- Extends DisplayPort up to 100 feet (30 meters)
- Supports resolutions up to 2560 x 1600 over two CAT-7 cables, and up to 1920 x 1200 or 1080p Full HD over one CAT-7 cable
- HDCP compliant
- Supports DisplayPort 1.1a
- 16-position EQ rotary switch to compensate for cable skew
- HPD Auto-Calibration button
- Pre-emphasis switch
- Drive level switch
- Boost level switches
- Power On and Link indicators
- Locking power supply
- Surface-mountable

Packing List

The *DisplayPort Extender over CAT-7* ships with the items listed below. If any of these items are not present in the box when you first open it, immediately contact your dealer or Gefen.

- 1 x DisplayPort Extender over CAT-7 (Sender unit)
- 1 x DisplayPort Extender over CAT-7 (Receiver unit)
- 1 x 6 ft. DisplayPort cable (M-M)
- 1 x 5V DC power supply
- 1 x Quick-Start Guide

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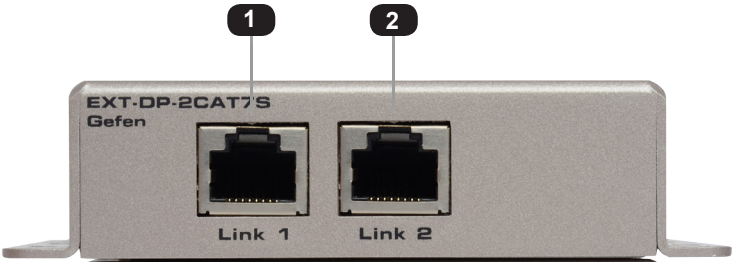
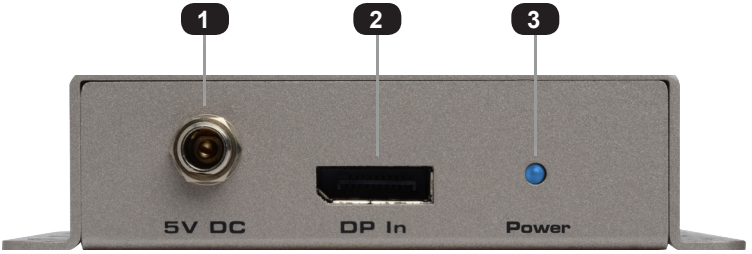
Panel Layout

Sender Unit (Front)



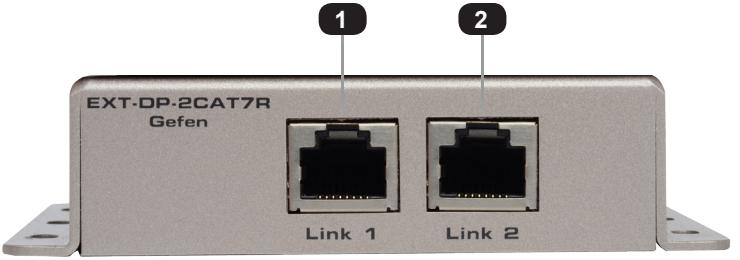
ID	Name	Description
1	Link 1	Connect a CAT-7 cable up to 100 feet (30 meters) from this jack to the **Link 1** jack on the Receiver unit.
2	Link 2	Connect a CAT-7 cable up to 100 feet (30 meters) from this jack to the **Link 2** jack on the Receiver unit.

Sender Unit (Back)



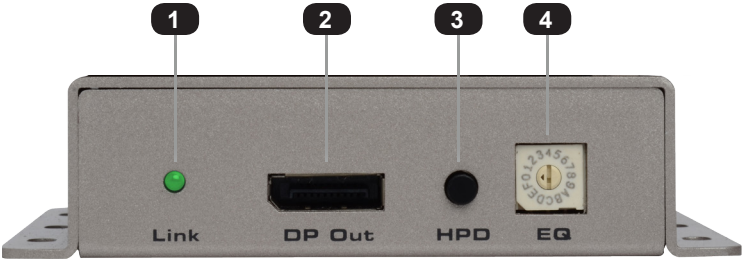
ID	Name	Description
1	5V DC	Connect the included 5V DC locking power supply to this connector and plug the AC power cord into an available electrical outlet. Only use the power supply shipped with this unit.
2	DP In	Connect a Hi-Def source to this port using a DisplayPort cable.
3	Power	This LED indicator will glow bright blue when the unit is powered.

Receiver Unit (Front)



ID	Name	Description
1	Link 1	Connect a CAT-7 cable up to 100 feet (30 meters) from this jack to the **Link 1** jack on the Sender unit.
2	Link 2	Connect a CAT-7 cable up to 100 feet (30 meters) from this jack to the **Link 2** jack on the Sender unit.

Receiver Unit (Back)



ID	Name	Description
1	Link	This LED indicator will glow bright green when the Sender and Receiver unit are connected using two CAT-7 cables. The Sender unit must be powered.
2	DP Out	Connect a DisplayPort cable from this port to the display.
3	HPD	Press this button to cycle the HPD line on the Receiver unit
4	EQ	Use this EQ rotary switch to adjust the quality of the output signal, based on the length and type of CAT-7 cable that is being used. See Adjusting the Signal Quality for more information.

Installation

Connecting the DisplayPort Extender over CAT-7

1. Use the included DisplayPort cable to connect the DisplayPort source to the **DP In** port on the Sender unit.

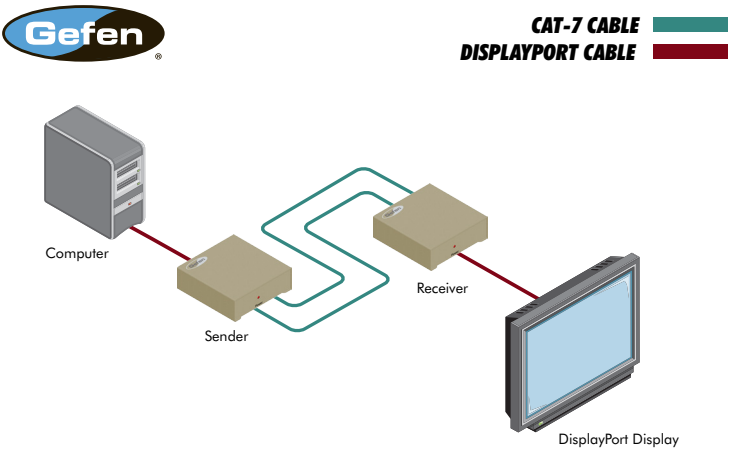
2. Connect a DisplayPort cable from the **DP Out** port on the Receiver to the display.

3. Connect two CAT-7 cables between the Sender and Receiver units. Each connector on the Sender and Receiver unit is identified as **Link 1** and **Link 2**. When connecting the CAT-7 cables, make sure that each CAT-7 cable that is connected to the Sender unit is connected to the corresponding jack on Receiver unit (e.g. **Link 1** --> **Link 1**, **Link 2** --> **Link 2**).

> **NOTE:** The *DisplayPort Extender over CAT-7* will support resolutions up to 1920 x 1200 (WUXGA) and 1080p Full HD if only a single CAT-7 cable is used. Two CAT-7 cables must be used to support resolutions up to 2560 x 1600.
>
> If only a single CAT-7 cable will be used, the CAT-7 cable must be connected between the **Link 1** connectors on both the Sender and Receiver unit. This same CAT-7 cable is used to power the Receiver unit.

4. Connect the included 5V DC locking power supply to the Sender unit. Do not over-tighten the locking connectors. Plug the AC power cord from the power supply to an available electrical outlet.

Sample Wiring Diagram



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LED Indicators

The LED indicators on the Sender and Receiver unit provide basic information on the current status of the *DisplayPort Extender over CAT-7*.

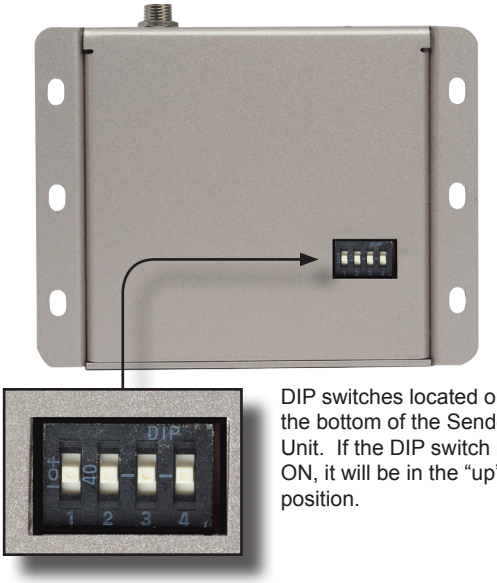
LED	Status	Description
Power	Solid blue	• Power connected to Sender unit.
	Off	• No power supplied to Sender unit.
Link	Solid green	• *DisplayPort Extender over CAT-7* is operating correctly. • Link integrity between Sender and Receiver unit is good.
	Solid red	• No DisplayPort source connected or source not active. • Receiver unit not connected to display.
	Flashing red	• Receiver is attempting to establish a link with the Sender unit.

Sender unit

Receiver unit

DIP Switch Configuration

The *DisplayPort Extender over CAT-7* contains four DIP switches on the bottom of the Sender unit. Adjust the DIP switch settings based on the type and cable length that is being used.



DIP switches located on the bottom of the Sender Unit. If the DIP switch is ON, it will be in the "up" position.

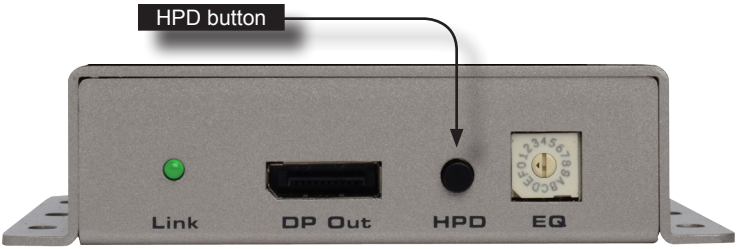
DIP Switch	Position	Differential Output Voltage
DIP 1	ON (default)	1.2 Vpp
	CENTER	1.0 Vpp
	OFF	600 mVpp

DIP Switch	Position	Pre-emphasis Select
DIP 2	ON (default)	9 dB
	CENTER	6 dB
	OFF	0 dB

DIP Switch	Position DIP 3	Position DIP 4	Boost Level (dB) @ 5 GHz
DIP 3 DIP 4	OFF	OFF	2.7 to 7.3 dB
	OFF	ON	12.2 to 16.6 dB
	ON	OFF	20.6 to 24.8 dB
	ON	ON	27.6 to 28.9

Hot-Plug Detect (HPD)

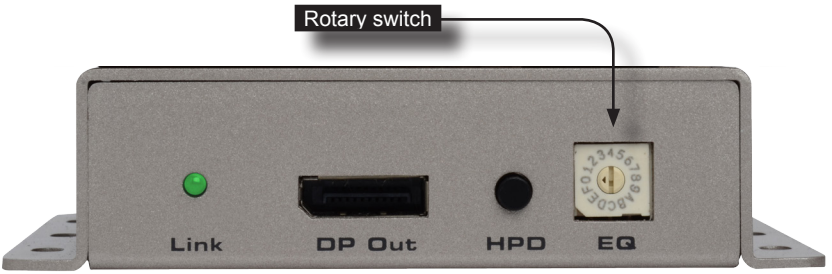
The *DisplayPort Extender over CAT-7* has an HPD button on the front of the Receiver unit. Pressing this button will cycle the HPD (Hot-Plug Detect) line on the display (sink) device. This HPD button provides the same effect as disconnecting then reconnecting the DisplayPort cable from the Receiver unit. Cycling the HPD line will cause the Receiver unit to re-read the EDID of the display and send it back to the DisplayPort source.



Adjusting the Signal Quality

The *DisplayPort Extender over CAT-7* has an equalization device on the front of the Receiver unit. This 16-position rotary switch is used to adjust the boost level depending upon the length of the CAT-7 cable.

1. Insert a small flat-headed tool into the notch on the rotary switch.



The table below provides examples of various cable types and lengths for CAT-6 cabling.

Cable type	Length	Rotary switch position
Belden CAT-6A, UTP, 10Gx12 - 4PR/23	100 feet (30 meters)	3 through D
Belden CAT-6A, UTP, 10Gx12 - 4PR	130 feet (40 meters)	9 through B
Teldor CAT-6A, FTP, 4x(2x26/7) - 500 Mhz	115 feet (35 meters)	A through F
Draka CAT-6A, FTP UC500 4P 09 339765 107271827	100 feet (30 meters)	7 through C

2. Turn the rotary switch clockwise or counterclockwise until it clicks to the next position.

3. Check the image. Continue adjusting the rotary switch if the issue is not resolved.

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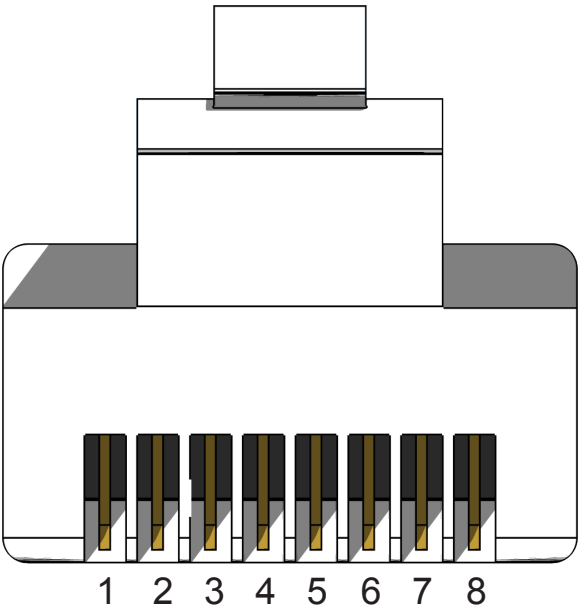
Cable Termination

Front of RJ-45 Connector

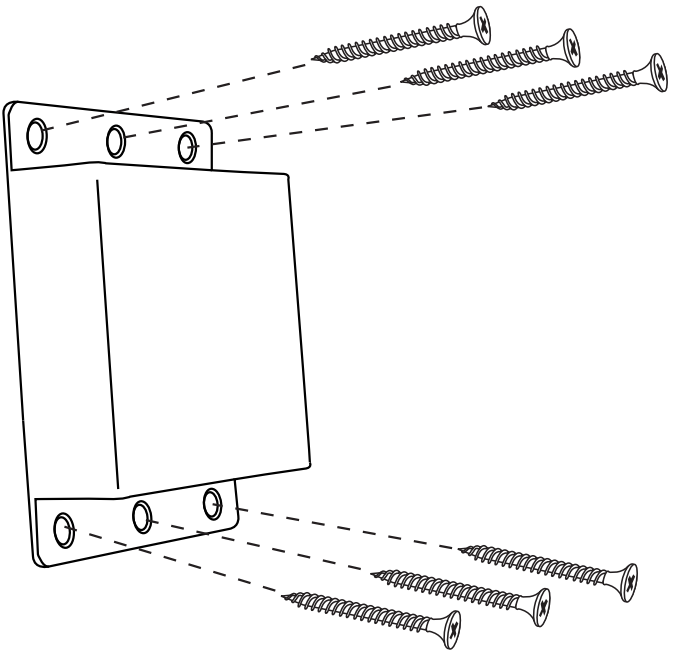


Gefen recommends the TIA/EIA-568-B wiring option. Use the table below when field-terminating cable for use with Gefen products.

Pin	Color	Description
1	Orange / White	TD+ (Transmit Data, positive differential signal)
2	Orange	TD- (Transmit Data, negative differential signal)
3	Green / White	RD+ (Receive Data, positive differential signal)
4	Blue	Unused
5	Blue / White	Unused
6	Green	RD- (Receive Data, negative differential signal)
7	Brown / White	Unused
8	Brown / White	Unused

It is recommended to use one continuous run from one end to the other. Patch cable is not recommended.

Surface-Mounting Instructions



The Gefen *DisplayPort Extender over CAT-7* can be mounted on any horizontal or vertical flat surface (e.g. wall or inside / outside a cabinet with wood / drywall screws) as shown in the diagram above. There should be an inch or two of clearance between the edges of the unit and any walls or vertical surfaces to allow for enough clearance for connection and disconnection of the DisplayPort cable.

For installation on a drywall surface, use a #6 drywall screw. When installing, it is recommended to use the center hole on a stud.

Specifications

Supported Formats	
Resolutions (max.)	• 1080p Full HD • 1920 x 1200 (WUXGA)

Electrical	
Video Data Rate	• Up to 2.7 Gb/s
EQ Switch (Receiver)	• 1 x 16-position rotary type
HPD Auto Calibration button (Receiver)	• 1 x tact-type
Boost Level Switches (Sender)	• 2 x 3-position DIP switch
Drive level switch (Sender)	• 1 x 3-position DIP switch
Power On indicator (Sender)	• 1 x LED, blue
Link indicator (Receiver)	• 1 x bi-color LED Green: Good link, Red: No link

Connectors	
Video Input (Sender)	• 1 x DisplayPort, 20-pin, female
Video Output (Receiver)	• 1 x DisplayPort, 20-pin, female
Link (Sender)	• 2 x RJ-45, shielded
Link (Sender)	• 2 x RJ-45, shielded

Operational	
Power Supply	• 1 x 5V DC, locking
Operating Temperature	• +32 to +104 °F (0 to +40 °C)

Physical	
Dimensions (W x H x D) (Sender / Receiver)	• 4.3” x 1” x 3.3” (110mm x 25mm x 83mm)
Unit Weight (each unit)	• 0.3 lb (0.15 kg)

Stretch it, Switch it, Split it, Control it.
Gefen's got it. ®

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This product uses UL or CE listed power supplies.